

CONFIDENTIAL128
FILE
997065
2258776NPIC/P&DS/D/6-1576
15 Spetember 1966

MEMORANDUM FOR THE RECORD

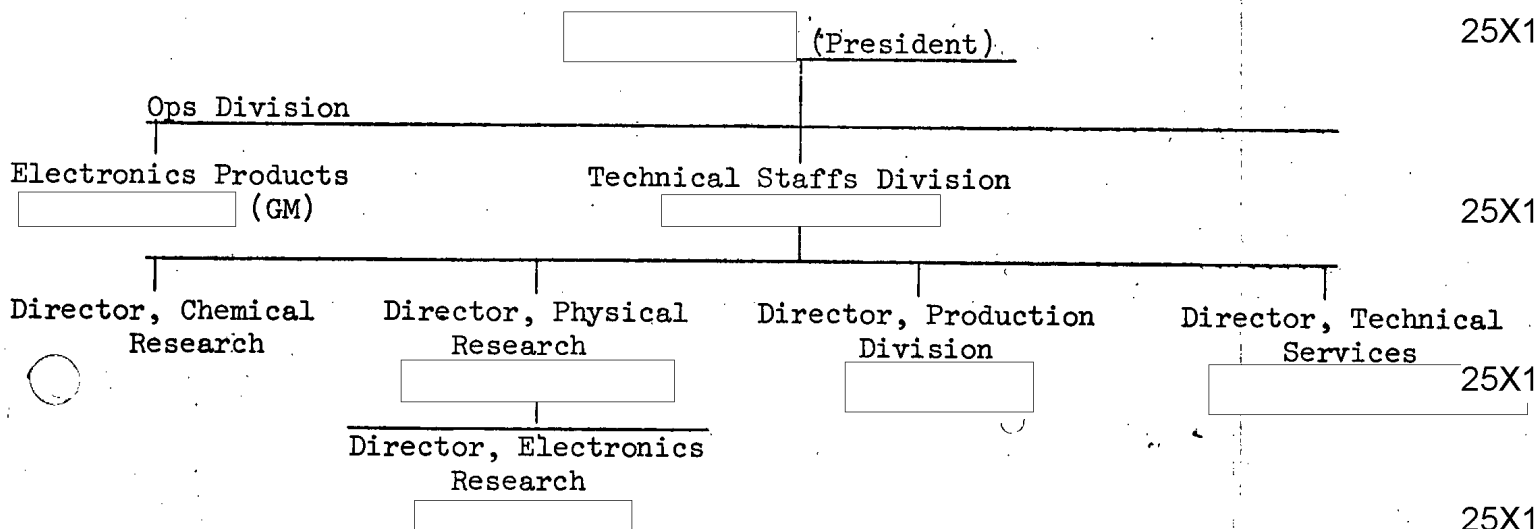
SUBJECT: Review of Coming Contract for Improved Rear
Projection Screen at Raleigh, North Carolina

1. Those present were:



25X1

2. Coming reorganization:



25X1

25X1

25X1

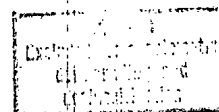
25X1

3. Some of the development work of the Electronics Research Division described

25X1

a. Microwave generation, propagation reception.

b. Fluidics - fluid logic machine controls.

CONFIDENTIAL

~~CONFIDENTIAL~~

SUBJECT: Review of Coming Contract for Improved Rear
Projection Screen at Raleigh, North Carolina

c. Electro optical displays

1) image intensifiers

2) holography

a) recording inaccessible shapes

b) home movies

(1) white light displays accomplished

(2) duplication without reduction of S/N is problem

c) Very interested in detailed discussion and mathematical analysis

3) Photochromic glass image intensifier

4) Injection Diode display

5) Optical computer memory

a) Contract with Hewlett-Packard

b) Hewlett-Packard requested copies of coming reports on our contract

c) CRT operated photochromic glass memory feasibility established at 5×10^7 bits per plane - operational model in 1 1/2 years.

6) Semi-conductor development

a) Junction diodes, etc.

7) Bio-electronics will begin in FY 1968.

4. Review of the Improved Rear Projection Screen Study by

25X1

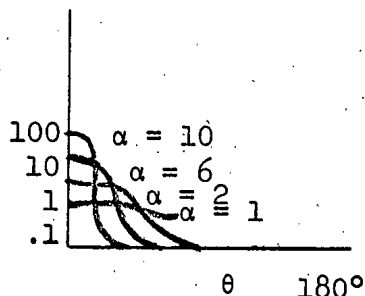
a. Corning materials typically have volume scattering properties - this defined their analytical approach which is according to the Mie Theory.

~~CONFIDENTIAL~~

CONFIDENTIAL

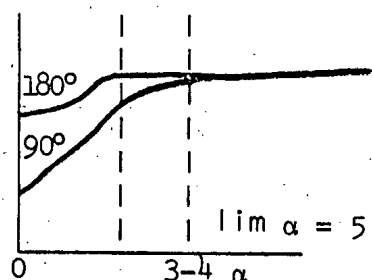
SUBJECT: Review of Coming Contract for Improved Rear
Projection Screen at Raleigh, North Carolina

b. By the Mie Theory they have been able to predicate scattering efficiency very accurately.



$$\alpha = \frac{2\pi r}{\lambda \text{ medium}}$$

Single scattering
Multiple scattering



$$\frac{I_{180}}{I_{90}} \quad 180^\circ$$

c. Single scattering will achieve more efficiency and less back or front scattering.

5. Derived objective: to minimize specular transmission without introducing multiple scattering.

$$\frac{I}{I_0} = e^{-(K\pi r^2 \rho T)}$$

ρ = particle concentration/cc
 T = thickness

$$\rho_{\mu} = \frac{1}{K\pi a^2 T}$$

6. [] then reviewed the analysis they had performed on special materials they had ordered from Corning Glass works in New York and compared this with the best representative screen materials which are commercially available. The Corning materials exhibited higher performance in terms of the efficiency of the utilization of incident illumination for any given characteristic. The significance of this fact cannot be completely determined until its relationship to the other variables such as MTF and reflectance are also defined. However, it appears that an improvement of 10-15% in the efficiency of light scattering screens can be achieved.

25X1

CONFIDENTIAL

CONFIDENTIAL

SUBJECT: Review of Coming Contract for Improved Rear
Projection Screen at Raleigh, North Carolina

7. The Corning work to date represents a significant improvement in the theory and analysis of light scattering phenomena. It is not yet possible to determine if significant improvement of light scattering screens in terms of MTF and efficiency is possible. However, this study should answer that question once and for all. If significant improvement is indicated it appears that Corning will have no difficulty in manufacturing the required material.

8. To date there is no indication of any exotic solution to this problem, but this phase of the investigation is not complete. I am assured that this aspect will also receive thorough attention at the hands

25X1
25X1

Deputy Chief, Development Branch, P&DS

Distribution:

Original - Route and File DB
1 - P&DS/DB Chrono

CONFIDENTIAL